

## CLAIMS

1. A method of modeling an information system having a structure, comprising:
  - 5 detecting activations at at least two nodes of a structural model of the system;
  - correlating the detected activations; and
  - modifying at least one property of a functional relationship in a functional model of the system, responsive to the correlation.
- 10 2. A method according to claim 1, wherein said correlating comprises correlating activations at nodes which are activated by an external event, responsive to said nodes being activated by a propagating activation in said model.
- 15 3. A method according to claim 1, wherein at least one of said correlated activations is not directly caused by an external event in the system.

✓ 4. A method according to ~~any of claims 1-3~~, wherein said property comprises a weight.

✓ 5. A method according to ~~any of claims 1-4~~, wherein said functional relationship is a

- 20 direct relationship between said nodes.

✓ 6. A method according to ~~any of claims 1-4~~, wherein said functional relationship does not directly relate either one of said nodes.

✓ 7. A method according to ~~any of claims 1-6~~, wherein said activations are simultaneous.

✓ 8. A method according to ~~any of claims 1-6~~, wherein said activations are temporally overlapping.

✓ 9. A method according to ~~any of claims 1-6~~, wherein said activations do not temporally overlap.

✓ 10. A method according to ~~any of claims 1-9~~, comprising decaying a weight of said functional relationship responsive to a time since a last activation.

*a* 11. A method according to ~~any of claims 1-10~~, wherein said model is implemented using a neural network, in which each mode is represented by a neuron.

*a* 5 12. A method according to ~~any of claims 1-11~~, comprising, modifying a structure of said information system using said modified functional model.

13. A method according to claim 12, wherein modifying a structure comprises optimizing a physical layout of said nodes.

10

*a* 14. A method according to claim 12 ~~or claim 13~~, wherein modifying a structure comprises optimizing a layout of communication lines between said nodes.

*Claim 12*

*a* 15. A method according to ~~any of claims 12-14~~, wherein modifying a structure comprises periodically harvesting said functional model.

*Claim 12*

*a* 16. A method according to ~~any of claims 12-14~~, wherein modifying a structure comprises continuously harvesting said functional model.

*Claim 1*

*a* 20 17. A method according to ~~any of claims 1-16~~, wherein said information system is a computer network.

*Claim 1*

*a* 18. A method according to ~~any of claims 1-16~~, wherein at least one of said nodes represents a human being.

25

*a* 19. A method according to ~~any of claims 1-16~~, wherein said information system is a library.

*Claim 1*

*a* 20. A method according to ~~any of claims 1-16~~, wherein said information system is a database.

30

*Claim 1*

*a* 21. A method according to ~~any of claims 1-16~~, comprising providing a permission to a real-world event responsive to said functional model.

*a* 22. A method according to ~~any of claims 1-16~~, wherein said information system is a data server and comprising using said functional model for enhancing data access.

*a* 23. A method according to ~~any of claims 1-16~~, wherein said information system is a distributed processing system and comprising using said function model for work allocation between elements of said processing system.

5 24. A method of optimizing a data cache used in conjunction with a system, comprising: determining a relationship between events in said information system and access to 10 data through said cache; and modifying caching behavior of said cache responsive to said determination.

15 25. A method according to claim 24, wherein determining a relationship comprises determining a functional model using a method according to any of claims 1-14.

*a* 26. A method according to claim 24 ~~or claim 25~~, wherein said data cache comprises a file server.

*a* 27. A method according to claim 24 ~~or claim 25~~, wherein said data cache comprises a 20 WWW site server.

*a* 28. A method according to claim 24 ~~or claim 25~~, wherein said data cache comprises a disk cache.

25 29. A method according to ~~any of claims 25-28~~, wherein modifying caching behavior comprises selecting from a set of caching behaviors.

*a* 30. A method according to ~~any of claims 25-28~~, wherein modifying caching behavior comprises setting parameters for existing caching rules.

30 *a* 31. A method according to ~~any of claims 25-28~~, wherein modifying caching behavior comprises trading off between different classes of events in said system.

32. A method according to claim 31, wherein at least one of said classes of events represents a particular user of the system.

*a*

33. A method according to ~~any of claims 24-32~~, comprising reorganizing data in a data store cached by said cache.

*Claim 24*